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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,311	12/30/2005	Eiji Murakami	96790P517	6897

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EXAMINER	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/563,311	MURAKAMI ET AL.	
	Examiner	Art Unit	
	James Hwa	2163	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 December 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-18* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *30 December 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *12/30/05; 3/13/06*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-18 are pending in this office action. This action is responsive to Applicant's application filed 12/30/2005.

Information Disclosure Statement

2. The Applicants' Information Disclosure Statements, filed on December 30, 2005 and March 13, 2006, have been received and entered into the record, Since the Information Disclosure Statements complies with the provisions of MPEP § 609, the references cited therein have been considered by the examiner. See attached forms PTO-1449.

Claim Rejections - 35 USC § 112

3. Claims 1 and 2 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 1 recites "means ..." on page 46 lines 12, 18 and claim 2 on page 46, line 3 are vague and confusing as it unclear weather or not Applicant is invoking §112 6th i.e. means plus function consideration.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-5, 7, 10-14 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokuda et al. (US Patent No. 7,024,400 B2, hereinafter "Tokuda") in view of Kauffman (US Patent Application No. 2001/0032029 A1, hereinafter "Kauffman").

As to claims 1 and 10

Tokuda teaches

"A sentence classification device characterized" as document classification is important not only in office document processing but also in implementing an efficient information retrieval system (column 1, lines 13-15).

"A term list having a plurality of terms each comprising not less than one word" as a term is defined as a word or a phrase that appears in at least two documents (column 4, lines 5-6).

"DT matrix generation means for generating a DT matrix two-dimensionally expressing a relationship between each document contained in a document set and

said each term" as the term by document matrix of the original documents (column 9, lines 23; see also table 1).

"DT matrix transformation means for generating a transformed DT matrix having clusters having blocks of associated documents by transforming the DT matrix obtained by said DT matrix generation means on the basis of a DM decomposition method" as exploiting the singular vector decomposition method, the major left singular vectors associated with the largest singular values are selected as a major vector space called an intra-DLSI space, or an I-DLSI space (column 3, lines 2-5).

Tokuda further teaches the extra-DLSI space, or the E-DLSI space can similarly be obtained by setting up a differential term by extra-document matrix where each column of the matrix denotes a differential document vector between the document vector and the centroid vector of the cluster, which does not include the document. The extra-DLSI space may then be constructed by the major left singular vectors associated with the largest singular values (column 3, lines 18-25).

"Classification generation means for generating classifications associated with the document set on the basis of a relationship between each cluster on the transformed DT matrix obtained by said DT matrix transformation means and said each document classified according to the clusters" as given a new document to be classified, a best candidate cluster to be recalled from the clusters can be selected from among those clusters having the highest probabilities of being the given differential intra-document vector (column 3, lines 10-13).

Tokuda further teaches the differences in word usage between the document and a cluster's centroid vector, the differential document vector is capable of capturing the relation between the particular document and the cluster. (Column 2, lines 41-46).

Tokuda does not explicitly teach the claimed limitation "DX matrix transformation" and "a DM decomposition method used in a graph theory".

Kauffman teaches

A possible minimization algorithm based on a decomposition method is described (page 23, paragraph 0305).

Kauffman also teaches it will be apparent to persons of ordinary skill in the art that other design techniques could be used to embody the aspects of the Enterprise model which include determining relations among the resources in the economy, determining values for the relations, selecting relations having higher values and performing transformations corresponding to the relations to produce new resources in the economy (page 4, paragraph 0070).

Kauffman teaches a technology graph is a model of a firm's processes. More specifically, a technology graph is a multigraph representation of a firm's processes (page 6, paragraph 0089; see also figure 5).

Kauffman further teaches in the technology graph (V, E) of a firm's processes, each hyperedge e of the set of hyperedges E represents a transformation. The outputs of the hyperedge e are defined as the intermediate goods and services or the finished goods and services produced by execution of the transformation represented by the

hyperedge e. The outputs of the hyperedge e also include the waste products of the transformation (page 6, paragraph 0091; see also element 510, 515 of figure 5).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, having the teachings of Tokuda and Kauffman before him/her, to modify Tokuda a DM decomposition method used in a graph theory because that would yield more accurate results as people enter the simulation to make the modeling more realistic as taught by Kauffman (page 4, paragraph 0068).

As to claims 2 and 11

Tokuda teaches

"Characterized in that said classification generation means comprises document classification means for outputting, for each cluster on the transformed DT matrix obtained by said DT matrix transformation means, documents belonging to the cluster as the same classification" as the diagonal elements of S are sorted in decreasing order of magnitude. To obtain a new reduced matrix S.sub.k, the k-by-k leftmost-upper corner matrix (k<r) of S is kept and other terms are deleted. Similarly, two new matrices U.sub.k and V.sub.k are obtained by keeping the leftmost k columns of U and V respectively. The product of U.sub.k, S.sub.k and V.sub.k.sup.T provides a reduced matrix D.sub.k of D that approximately equals to D (column 5, lines 21-28).

As to claims 3 and 12

Tokuda teaches

"Characterized by further comprising label generation means for outputting each term strongly connected to each document belonging to said arbitrary cluster as a label indicating a classification of the cluster" as a new efficient supervised document classification procedure introduced, whereby learning from a given number of labeled documents preclassified into a finite number of appropriate clusters in the database, the classifier developed will select and classify any of new documents introduced into an appropriate cluster within the classification stage (column 2, lines 21-25).

As to claims 4 and 13

Tokuda does not explicitly teach the claimed limitation "characterized by further comprising document organization means for sequentially outputting documents belonging to said arbitrary cluster or all documents in an arrangement order of the documents in the transformed DT matrix".

Kauffman teaches

Resources, intermediate goods and services, finished goods and services, and machines are types of goods and services in the economy. Machines are goods or services, which perform, ordered sequences of transformations on an input bundle of goods and services to produce an output bundle of goods and services (page 6, paragraph 0092).

Kauffman further teaches the homologous action patters can be created by tuning the partitioning of the organization into patches, by tuning how decisions at one point in the real organization are taken with respect to a prospective benefit of a fraction

p of the other points in the organization affected by the first point, and by tuning what fraction, tau, of points in the organization should try operational and other experiments to improve performance (page 30, paragraph 0424).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, having the teachings of Tokuda and Kauffman before him/her, to modify Tokuda the document organization because that would allow for effective, dynamic negotiation in different domains as taught by Kauffman (page 20, paragraph 0273).

As to claims 5 and 14

Tokuda teaches

"Characterized by further comprising summary generation means for outputting, as a summary of said arbitrary document, a sentence of sentences constituting the document which contains a term strongly connected to the document" as the setting up of a DLSI space-based classifier is summarized. Documents are preprocessed, to identify and distinguish terms, either of the word or noun phrase, from stop words. System terms are then constructed, by setting up the term list as well as the global weights. The process continues with normalization of the document vectors, of all the collected documents, as well as the centroid vectors of each cluster. Following document vector normalization, the differential term by document matrices may be constructed by intra-document or extra-document construction (column 7, lines 24-34).

As to claims 7 and 16

Tokuda teaches

"Large classification generation means for generating a large classification of documents by repeatedly performing clustering processing of setting a DT matrix generated by said DT matrix generation means in an initial state, causing said virtual representative document generation means to generate a virtual representative document for each cluster on a transformed DT matrix generated from the DT matrix by said DT matrix transformation means, generating a new DT matrix used for next clustering processing by adding the virtual representative document to the transformed DT matrix and deleting documents belonging to the cluster of the virtual representative document from the transformed DT matrix, and outputting, for said each cluster, information associated with the documents constituting the cluster as large classification data" as given a new document to be classified, a best candidate cluster to be recalled from the clusters can be selected from among those clusters having the highest probabilities of being the given differential intra-document vector (column 3, lines 10-13).

Tokuda also teaches the extra-DLSI space may then be constructed by the major left singular vectors associated with the largest singular values. As in the intra-DLSI space, in addition to the global description capability, the space shares the improved adaptability to the unique characteristics of the particular differential document vector (column 3, lines 18-21).

Tokuda further teaches a group of procedures are then repeated for each of the clusters of the database. More specifically, using the document to be classified, a differential document vector x=N-C, where C is the normalized vector giving the center or centroid of the cluster, is constructed. Steps may be calculated for the document. The Bayesian posteriori probability function P (D.sub.I|x) is then calculated. Finally, the cluster having a largest P (D.sub.I|x) is selected as the recall candidate (column 8, lines 46-56).

Tokuda does not explicitly teach the claimed limitation "virtual representative document generation means for generating a virtual representative document, for each cluster on a transformed DT matrix, from a term of each document belonging to the cluster".

Kauffman teaches

OrgSim can model decision making units at varying degrees of abstraction. For example, OrgSim can represent decision making units as detailed as an individual employee with a particular amount of industrial and educational experience or as abstract as a standard operating procedure. Using this abstract modeling ability, OrgSim can represent a wide range of organizations. First, OrgSim can represent the structure of the communication network among the decision making units. Second, OrgSim can model the temporal aspect of the information flow among the decision making units. (page 4, paragraph 0063).

Kauffman also teaches in the second regime called the chaotic regime, the initial change to a firm's operations management causes a range of avalanches of induced alterations, which scale in size from small to very large (page 17, paragraph 0230).

Kauffman further teaches the method probabilistically generates new points having the desired regularities using the extrapolated model. The method also uses samples having higher costs to incrementally improve the density estimate for higher intervals instead of simply discarding those samples (page 20, paragraph 0268).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, having the teachings of Tokuda and Kauffman before him/her, to modify Tokuda virtual representative document generation because that would provide the mechanism by which transactions linking activities in processes are coordinated and algorithmic procedures based on computer models of the state of the firm optimize these transactions as taught by Kauffman (page 20, paragraph 0270).

5. Claims 6, 8, 9, 15, 17 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Tokuda et al. (US Patent No. 7,024,400 B2) and Kauffman (US Patent Application No. 2001/0032029 A1) as applied to claim 1 above, and further in view of Agrawal et al. (US Patent Application No. 2001/0037324 A1, hereinafter "Agrawal").

As to claims 6 and 15

Tokuda teaches

"Characterized by further comprising: term list edition means for adding or deleting an arbitrary term with respect to the term list; and index generation means for making said DT matrix generation means generate DT matrices by using term lists before and after edition by said term list edition means, and generating and outputting an index indicating validity of the edition from the DT matrices" as the Latent Semantic Indexing (LSI) with Singular Value Decomposition (SVD) has proved to be a most efficient method for the dimensionality reduction scheme in document analysis and extraction, providing a powerful tool for the classifier when introduced into document retrieval with a good performance confirmed by empirical studies. A distinct advantage of LSI-based dimensionality reduction lies in the fact that among all the projections on all the possible space having the same dimensions, the projection of the set of document vectors on the LSI space has a lowest possible least-square distance to the original document vectors. This implies that the LSI finds an optimal solution to dimensional reduction. In addition to the role of dimensionality reduction, the LSI with SVD also is effective in offering a dampening effect of synonymy and polysemy problems with which a simple scheme of deleting terms cannot be expected to cope. Also known as a word sense disambiguation problem, the source of synonymy and polysemy problems can be traced to inherent characteristics of context sensitive grammar of any natural language (column 1, line 57 to column 2, line 9).

Tokuda does not explicitly teach the claimed limitation "edition means for adding or deleting an arbitrary term with respect to the term list".

Kauffman teaches

The set of transformations can be held fixed throughout the execution of the technology graph synthesis method. Alternatively, new transformations could be added to the set of transformations and old transformations could be removed (page 7, paragraph 0101).

Agrawal also teaches

A system, process, and article of manufacture for organizing a large text database into a hierarchy of topics and for maintaining this organization as documents are added and deleted and as the topic hierarchy changes (abstract)

Agrawal further teaches addition and deletion of documents to given topics, as well as reorganization of the topic hierarchy itself, are easily handled. The text models built at each node also yield a means to summarize a number of documents using a few descriptive keywords, referred to herein as their signature (page 3, paragraph 0030).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, having the teachings of Tokuda, Kauffman and Agrawal before him/her, to modify Tokuda edition means for adding or deleting an arbitrary term with respect to the term list because that would provide a means for designing vastly enhanced searching, browsing and filtering systems as taught by Agrawal (page 1, paragraph 0009).

As to claims 8 and 17

Tokuda does not explicitly teach the claimed limitation "characterized in that said large classification generation means terminates repetition of the clustering processing

when no cluster is obtained from the transformed DT matrix in the clustering processing".

Kauffman teaches

The method determines whether the iterate identifier is less than a maximum iterate value. If the iterate identifier is not less than the maximum iterate value, the method terminates. If the iterate identifier is less than the maximum iterate value then control proceeds (page 7, paragraph 0097; see also element 630 of figure 6).

Agrawal teaches

Each of the other second level topics may be divided at the third level to further topics. Also, in a similar fashion, further levels under the third level may be included in the topic hierarchy, or taxonomy. The final level of each path in the taxonomy terminates at a terminal or leaf node, labeled c in the diagram (page 6, paragraph 0087).

Agrawal further teaches large sub-trees in the topic tree can be eliminated forthwith if the score of the root of those sub-trees are very poor (page 8, paragraph 0131).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, having the teachings of Tokuda, Kauffman and Agrawal before him/her, to modify Tokuda terminates repetition of the clustering processing because that would provide a means for designing vastly enhanced searching, browsing and filtering systems as taught by Agrawal (page 1, paragraph 0009).

As to claims 9 and 18

Tokuda teaches

"Characterized by further comprising large classification label generation means for, if a virtual representative document is contained in a given cluster of clusters obtained by the clustering processing" as a new efficient supervised document classification procedure, whereby learning from a given number of labeled documents preclassified into a finite number of appropriate clusters in the database, the classifier developed will select and classify any of new documents introduced into an appropriate cluster within the classification stage (column 2, lines 22-28).

Tokuda does not explicitly teach the claimed limitation "generating a label of the cluster on which the virtual representative document is based from a term strongly connected to the virtual representative document".

Kauffman teaches

OrgSim can model decision making units at varying degrees of abstraction. For example, OrgSim can represent decision making units as detailed as an individual employee with a particular amount of industrial and educational experience or as abstract as a standard operating procedure. Using this abstract modeling ability, OrgSim can represent a wide range of organizations. First, OrgSim can represent the structure of the communication network among the decision making units. Second, OrgSim can model the temporal aspect of the information flow among the decision making units. (page 4, paragraph 0063).

Agrawal also teaches

With reference to the hierarchy represented, statistics are calculated for the science node, based on the terms in all of the documents from the collection set that are classified in classes represented by nodes below the science node. Including the nodes labeled biology, chemistry, electronics, and all children nodes of those nodes (page 6, paragraph 0093).

Agrawal further teaches large sub-trees in the topic tree can be eliminated forthwith if the score of the root of those sub-trees are very poor. Text database population is not the only application of fast multi-level classification. With increasing connectivity, it will be inevitable that some searches will go out to remote text servers and retrieve results that must then be classified in real time (page 8, paragraph 0131).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made, having the teachings of Tokuda, Kauffman and Agrawal before him/her, to modify Tokuda strongly connected to the virtual representative document because that would provide a system which is sufficiently fast as taught by Agrawal (page 2, paragraph 0025).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant' disclosure.

Murakami et al. (US Patent Application No. 2006/0288029 A1).

Lantrip et al. (US Patent Application No. 2002/0031254 A1).

Ginis et al. (US Patent Application No. 2003/0216951 A1).

Schuetze (US Patent No. 5,675,819 A).

Ikeda et al. (US Patent No. 6,243,723 B1).

Contact Information

Any inquiry concerning this communication or earlier communications from the examiner should be directed to James Hwa whose telephone number is 571-270-1285. The examiner can normally be reached on 8:00 – 5:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Don Wong can be reached on 571-272-1834. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only, for more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the PAIR system contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JH
8/6/2007

James Hwa
Examiner
Art Unit 2163